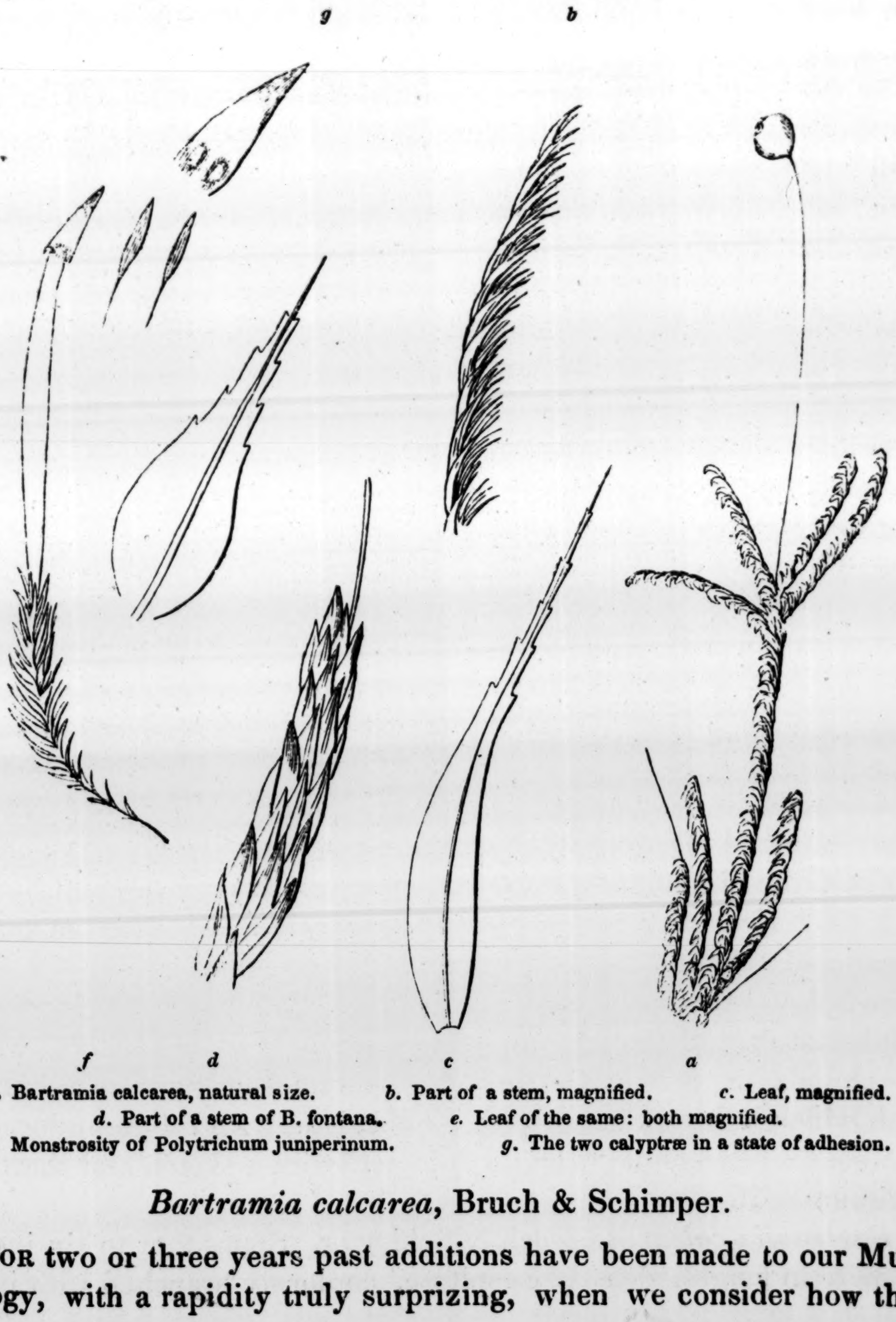
THE PHYTOLOGIST.

No. XXXIX. | AUGUST, MDCCCXLIV. | PRICE 1s.

ART. CCXXVII. — *Notes on British Mosses.*

By THOMAS EDMONSTON, Jun. Esq.



a. Bartramia calcarea, natural size. *b.* Part of a stem, magnified. *c.* Leaf, magnified. *d.* Part of a stem of B. fontana. *e.* Leaf of the same: both magnified. *f.* Monstrosity of Polytrichum juniperinum. *g.* The two calyptræ in a state of adhesion.

Bartramia calcarea, Bruch & Schimper.

FOR two or three years past additions have been made to our Muscology, with a rapidity truly surprizing, when we consider how thoroughly our mosses were believed to have been explored by the many eminent cultivators of that branch of Botany, in this country. That several of these so called *new* species will turn out merely varieties of well known plants, there can, I fear, be little doubt; but that a very considerable proportion are really and *bona fide* good species, I am equally convinced.

Those two eminent botanists, Drs. Hooker and Taylor, the authors of the well known 'Muscologia Britannica,' a work which is deservedly held in high repute, differed so widely, and in many cases so judiciously, from the great majority of continental botanists, especially Bridel and Schwægrichen, regarding the limits of species and the value to be attached to distinctive marks, that for the most part British muscologists were content to take the species as they found them in the 'Muscologia,' without at all referring to continental works, in which, apparently, so many spurious species existed. Lately, however, the splendid 'Bryologia Europæa' of two German botanists — Bruch and Schimper, has been much consulted by our muscologists, and I fear we are likely to go just as far into the opposite extreme of *hair-splitting*. Undoubtedly, many of the plants described as distinct in the Bryologia, are mere forms of others, and occasionally the variations are so slight, that we cannot help regretting that such trivial characters are employed in so valuable a work. Yet still, in my opinion, and in that of many far better botanists, the authors of the work in question are entitled to great praise for their acuteness and discrimination in distinguishing many species undoubtedly distinct, but which had been hitherto confounded. The species above figured is one of these. It was, I believe, first clearly described as British by Mr. Spruce, in a very interesting paper on the mosses of Teesdale, in the 'Annals of Natural History,' xiii. 197. Having lately gathered most beautiful specimens of this splendid moss, on the banks of the Findhorn, near Darnaway, about three miles from Forres, Morayshire, where it grows plentifully associated with Bryum ventricosum, Marchantia hemisphærica, and Asplenium viride, — I have been led to examine it more particularly, and the result is, that I think it a very distinct plant, and constant to its characters, which are abundantly sufficient to keep it separate from Bartramia fontana, with which it has hitherto been confounded. And I am induced to trouble the readers of 'The Phytologist' with a sketch and short description of it.

Bartramia calcarea, Bruch & Schimper. Stems four to six inches or more in height, densely cæspitose, copiously branched with innovations, and bearing the setæ, and frequently the withered capsules, of one or two preceding years, remaining upon the lower part of the stem. Leaves all falcato-secund, lanceolato-acuminate, sharply toothed in their upper half; nerve strong, reaching to the summit of the leaf. Seta frequently, but not invariably, lateral from the innovations. Capsule slightly inclined, globose (narrower and more curved after the plant has been dried); lid conical.

The capsules on my specimens, though fully grown, were too young to afford a satisfactory analysis of the peristome; neither was I so fortunate as to find the male flowers. In both the peristome and the leaves of the perichætia of the male flowers, characters are said to be found. I found the latter in fine state on B. fontana (*true*), and can verify Mr. Spruce's observations, as to the inner leaves of the perigonia in that plant being "obtuse, with an abbreviated or obsolete nerve;" the nerve in fact is scarcely discernible. In B. calcarea the leaves are said to be "all acuminate and nerved throughout."

The most apparent points of difference between this plant and the true B. fontana, are to be found in the leaves being broader (ovato-acuminate) and erecto-patent, imbricated on all sides (not at all secund); the capsule in B. calcarea is also more decidedly globose, and scarcely so inclined; it is also less deeply furrowed, and the whole plant is larger. These characters, and a glance at the figures, will, I think, convince the most sceptical of the great difference between the two plants. This difference is fully greater than between B. pomiformis and Halleriana or ithyphylla; and if the characters are not deemed sufficient to allow the plant to rank as a species, I am at a loss to conceive how Andræa nivalis is to be distinguished from A. Rothii, or Dicranum falcatum from D. Starkii.

Is Bartramia falcata of "Hooker in Linn. Trans. ix. 317," (referred to in the 'Muscologia Britannica') the same as this? I have not the work at hand to refer to, but if it be the same, I suppose the name will have to be changed.

Polytrichum juniperinum.

I am induced to send you the accompanying sketch (fig. *f.* p. 1033) of a specimen of Polytrichum juniperinum, which I found a few days ago. It presents the curious appearance of two calyptræ being joined together, so as to have the external appearance of one; *internally* however, as is shown at *g*, the calyptra appears distinctly two-celled, each cell containing a theca; so that there is not the least adhesion between either the setæ, or the capsules inclosed in this double calyptra, and the appearance is evidently occasioned by the two calyptræ growing together at an early stage. The capsules in this specimen were quite young. T. EDMONSTON, JUN.

Aberdeen, May, 1844.

[Mr. T. Sansom (Phytol. 93) has described a precisely similar state of Polytrichum commune; and at the same time mentions a specimen of P. juniperinum in the same state, collected by Mr. W. Gardiner.—*Ed.*]

ART. CCXXVIII. — *Sketch of a Botanical Ramble to Twll dû, June 19, 1844.* By JOSEPH SIDEBOTHAM, Esq.

DURING a short stay at Beaumaris in June, I made an excursion among the Caernarvonshire mountains, taking the route through Bangor, along the Capel Curig road, through the Penryn slate-quarries to Twll dû, thence crossing the mountains to Llanberis, and the following day making the ascent of Snowdon, returning by the lakes and through the Llanberis quarries.

Having been unsuccessful in one of the objects of my journey, viz., to procure Lloydia serotina, from its inaccessible situation, I determined on a second excursion. A friend from Bangor accompanied me. We took a conveyance as far as the Penryn quarries, having previously agreed with one of the workmen to accompany us, and to bring a rope. The morning was not one of the most promising for a botanical expedition, the mountains being completely hidden by a thick mist, while occasionally there fell a little rain. Nothing particular occurred during our walk along the road. Allosorus crispus was very plentiful on the walls, and we saw plenty of Saxifraga stellaris on the wet rocks.

Twll dû is situated to the right of the road, just at the commencement of Llyn Ogwen, a large lake which borders the pathway on the left hand. Here commenced our ascent, which lay over fragments of rock and heathy ground, abounding in Lycopodium Selago and alpinum. In a short time we reached Llyn Idwel, a lake of considerable extent, the shore of which was lined with fragments of Isoetes lacustris, and the bottom is in some parts covered with it, growing intermixed with Lobelia Dortmanna. Subularia aquatica also grows here in plenty; but we did not find any in flower, being a little too early in the season.

On the neighbouring rocks was abundance of Andræa Rothii, in fruit, with A. alpina in smaller quantity; also Grimmia ovata, Anictangium ciliatum, and several species of Trichostomum: scattered here and there were Carex dioica and Splachnum sphæricum. We did not stay long in this place, as the rain began to descend rather heavily, but made the best of our way along the shore of the lake, and up the rugged side of the mountain to Twll dû.

On the occasion of my previous visit, I ascended the course of a mountain stream, and gathered the following mosses upon the rocks which bordered it. Gymnostomum fasciculare, Weissia acuta, Glyphomitron Daviesii, Bryum crudum, B. julaceum, B. ventricosum and B. Zierii, with many others of less note. The rocks on our way up the mountain side were covered with the beautiful Silene acaulis, Saxifraga hypnoides, stellaris and oppositifolia, in fruit, Oxyria reniformis and Asplenium viride. Twll dû is an immense chasm or cleft in the mountain, the sides of which are perpendicular. It appears to have been formed by the long-continued action of a stream, which runs from a small lake above, called Llyn y cwn. At my first visit, I penetrated this cleft till I reached an immense block of stone, which completely chokes the passage, rendering further progress next to impossible. As our present object was to gain the top as soon as possible, we turned to the left on reaching the chasm, and so ascended, keeping close to the wall of rocks.

On these rocks we gathered Trollius europæus, Thalictrum alpinum, Rhodiola rosea, Arenaria verna, Gnaphalium dioicum, and a Saxifrage which I suppose to be S. cæspitosa; Hypnum Crista-castensis and Neckera crispa grew at the base, but we found no fruit. On reaching the summit, our friend the quarryman took off his load of rope, to reconnoitre the place. I had to act as guide, being the only one of the party who had visited the place before. We first went to the channel where the little stream leaps over the rocks into the profound abyss. From this place we could see plenty of the Lloydia serotina growing on the face of the precipice, above the large block of stone. There was one specimen bearing two flowers, a yard or two from the waterfall, almost within reach. I had seen the same specimen before, and wished much to gather it, but the attempt would have been very dangerous, from the friable nature of the rock. Fortunately I saw another, which, after a little climbing, I managed to obtain. We then returned to the rocks immediately above the precipice, where the quarryman fastened the rope round his body, and began the descent, having first given us strict injunctions not to let go our hold.

He returned however almost immediately, with the unwelcome news that the rope only reached a few feet over the brink of the precipice; it should have been at least ten yards longer. This was mortifying: but *ne cede malis*, thought I; so after a short consultation, we agreed to attempt a footing lower and nearer the precipice, and presently fixed on a small ledge of rock at the brink, where it was possible, by a little clearing from debris to place our feet. From this point we lowered our friend John, who soon reappeared with some specimens of of the precious plant in his mouth, and a few others in his hat.

The mist had now cleared away from the mountains, and we went to Glyder Vawr to search for Woodsia Ilvensis; in this we were unsuccessful, although possessing plans of the district, with which my friend Mr. Roberts of Bangor had favoured me, embracing even the actual rock upon which he and Mr. Borrer had gathered it in plenty. Nothing else occurred particularly worthy of note, but I may observe that there was plenty of Juniperus nanus coming into flower, and a little Splachnum mnioides about Llyn y cwn. JOSEPH SIDEBOTHAM.

Manchester July 10, 1844.

ART. CCXXIX.—*Further Remarks on Carices.* By S. GIBSON, Esq.

THE object of this note is to prove that my Carex pseudo-paradoxa does not really belong to C. teretiuscula, as has been advocated by Dr. Wood and other botanists.

Controversy is of great value in Botany as well as in the other sciences, as it has always a tendency to lead to further researches, and the facts which result from them often tend to the development of truth. Had my former remarks upon these plants been generally admitted, I should probably have remained satisfied; but the objections and doubts that have been raised against it, have led me to a very detailed investigation of the plants in question; and the result is that my former opinion on the subject is still unshaken.

But here I may observe in regard to the term, that it is a matter of no moment with me whether they be called species or varieties, since I know that it is not in the power of man to tell what a species is.

All that I shall here attempt to prove is that such characters as I have pointed out do really exist in the plants.

And before I make any attempt to do this, I will just say that my remarks will (unless otherwise expressed) be limited to those specimens which were sent to Mr. Babington* by Dr. Wood, marked "Seaman's Moss-pits, Cheshire,"† and those referred to by our editor (Phytol. 811), as he tells us he received them from the Dr. I confine myself to these specimens, because Mr. Luxford's history of the plants in question is a very unsatisfactory one, inasmuch as it alludes to his having received the plants from persons who have not been very particular in sending the disputed plant when they have been asked for it.

Mr. King, of Lane-house, near Halifax, asked Mr. Sidebotham (one of the parties referred to) for my C. pseudo-paradoxa, and he sent him specimens under that name. Mr. King, on receiving them, finding them not to agree with the description I had given of it (Phytol. 778), came and desired me to show him my specimens; this I did with pleasure, and he, the moment I opened the paper, pronounced them very different from those he had received from Mr. Sidebotham. Another instance of this gentleman's negligence will be exemplified by the following quotation, which is from one of his letters to me, dated January 11, 1844: — "Mr. Babington wrote to me for ripe fruit of the Carex, and I sent him some of the teretiuscula by mistake."

I will now turn to our editor's note, (Phytol. 811); and the first thing I shall notice is the following passage. "We have now before us under the microscope, the fruit of the disputed plant, of C. teretiuscula, and of C. paniculata, all in a mature state." By this and what follows, I understand the reference to be to the perigynium only. Allowing then that there is a striking difference in the fruit (perigynium) of these two plants, I hope that I shall not be thought presumptuous if I just see how these differences have been pointed out by persons who have written on the subject, and attempted to describe them. Sir W. J. Hooker (British Flora, ed. 5), speaks of the fruit of these *two plants* as having their beaks bidentate, he says nothing of the one being more so than the other. He also says, on the authority of Dr. Boott, that the winged margins of the fruit of the teretiuscula are SERRULATE, and that those of the paniculata are SERRATED; and he speaks of them *both* as having a central, and sometimes winged line along their beaks, on the convex side of the perigynia. Our editor tells us (Phytol. 812) that the *paniculata* has a FRINGED membrane upon the beak of its fruit, and on the other hand, that the *teretiuscula* has a SERRATED membrane. Mr. Luxford says (Phytol. 922), when speaking of the *teretiuscula*, that it has a SERRULATE wing. Smith describes them both as having SERRATED beaks. These two plants are spoken of indiscriminately as having their fruit *bifid* or *notched* at the beak. The two are also spoken of as having a dorsal wing upon the convex side of their perigynia. By this it will appear that the difference of the fruit of these plants is either very inconsiderable, or that the parties who have attempted to describe them have never examined them.

---

* *At my request*, that gentleman favoured me with the specimens now alluded to; and I now take this opportunity of thanking him for the kindness.

† If there be "no such thing as secresy" in the case, I now say with *candour*, that I should take it as one of the *greatest of favours* if some of the parties who are acquainted with the locality, would give in 'The Phytologist' such a direction as would enable a stranger in that neighbourhood to find the above mentioned place.

I have now given the ideas of some of our most eminent writers upon these plants, in nearly their own words, lest it should be said that I have misapplied their meaning. I shall now impartially give the results of my own observations on this subject; and by an exact examination of the plants themselves, will endeavour to find out which of the above accounts, so diametrically opposed to each other, are the most consonant to matter of fact.

But before I commence I must lay down this general principle, which I hope will not be denied, namely, that Nature is uniform in all her operations, and does not recede from the rule laid down by the Wise Disposer of all things, by making the same thing often two different methods. Therefore, if I were to find a central or winged line on the convex side of the fruit of these plants, or find them with SERRATED, CILIATED, or SERRULATED lateral margins in one instance, I should expect to find them so in all. And now I must say that if any person will take the trouble of examining the perigyniums of these plants, he will find there is neither a central wing nor central line on their convex side; but there is an opening on that side which extends downwards to the very bottom of the beak, and in some instances to the base of the perigynium itself. The curious nature of this opening may perhaps have given rise to the various opinions as to its having a wing or winged line. This opening may be seen by passing a knife in a longitudinal direction along the outer or convex side of the beak, which will be found to consist of two thin membranes, which overlap each other, and thus form what a mechanic would call a spliced joint. This is a description of a perigynium in its ordinary form; but in some we find one or both of these membranes that is not laid close down, and thus may have given rise to the supposed central wing; in others we find these membranes turned inwards, and in that state may have given rise to the supposed central line. When the beak is opened out and laid flat, it will be found that what was the inner or concave side is very thin in the middle, particularly so towards the point, and this part being split by the least accident, causes it to be more or less notched or bifid. This character is common to C. teretiuscula, paniculata, paradoxa, and to my pseudo-paradoxa, but on examination it will be the least distinct in paradoxa and most distinct in my pseudo-paradoxa. Carex paniculata is spoken of as having the beak of its perigynium more deeply bifid; with a broader and deeper fringed margin. In this I find no difference between paniculata and its allies, as they are all equally variable in this respect. I have the perigyniums of paniculata with their margins as narrow and as indistinctly fringed as any I ever saw in teretiuscula; and I have often met with paniculata with the beaks of its perigyniums quite entire, that is to say, neither bifid nor notched. To speak of the beaks or lateral margins of these perigyniums being more or less white or green, would only be losing time, as any person who has paid the least attention to the subject will know how far we can depend on such a character, as all of them will (I think) be found green when in a young state, and more or less white with age.

Having now spoken at some length on the beaks of the perigyniums of these plants, I now come to notice their lower parts: and on examination I find these parts (in all the four forms) to be equally variable, that is, in being convex on one side, and flat or concave on the other, or in being more or less convex on both sides. I have seen C. paniculata with its perigyniums even concave on both sides; and at other times I have met with it having its perigyniums as much inflated and quite as gibbous on their inner faces as ever I saw those parts in C. paradoxa; and on the other hand, I have seen paradoxa with the inner faces of its perigyniums flat, and in some instances concave on that side. In short, I always consider the perigynium as the most variable part in all Carices, the shape depending much on their being more or less densely placed on the rachis. Thus, a spike or spikelet (of the same species) having four, six or eight rows, would have them of various shapes, and when placed very close one above the other, so as to press the beaks outwards, they will be found more convex upon their inner faces than when they are more distantly placed.

My reasons for not considering the perigynium of Carices as being part of their fruit, are as follows. First; because I often find them with pistils which remain abortive: secondly, with stamens only: thirdly, with both stamens and pistils: fourthly, proliferous, that is, with the peduncle of one perigynium passing through the beak of the next below, and thus rising one above the other for four or five heights; in this state they are sometimes abortive, and at other times produce perfect nuts: and, fifthly, I find them with the peduncle of a fertile spike passing through the beak of one or more of their perigyniums; this character is common in the different forms of what is called C. Goodenovii. When in this state I find the perigyniums insensibly passing into what are called scales or glumes; and on the other hand, I find the glumes insensibly passing into what are called the bracteas; and again, I find these bracteas in the same insensible manner passing into what are called the leaves. Thus we have perigyniums, glumes, bracteas and leaves, so closely connected that it is impossible to tell where to strike the line of distinction.

I now turn to Mr. Luxford's note (Phytol. 918), and as I only study plants &c. in their natural habits, I do not know what Mr. L. means us to understand by his reference "to our domesticated animals and our cultivated plants and fruits." But I must say that I am somewhat surprised at Mr. Luxford's notion of a *natural group* of Carices, when I find that he has put Carex vulpina alongside of C. paniculata &c.: and I am also surprised to find him saying that "the inflorescence of Carex vulpina is tolerably constant," as I do not know of any Carex that is more inconstant in its mode of inflorescence. And so far as its natural affinities are concerned, I think that it would have been better placed with such species as muricata, divulsa, &c.

And as *I do not study figures*, I will pass over those of Mr. Wilson and the others which have been "copied from Leighton's 'Flora of Shropshire,'" by just saying that I have never seen the mature nut of a Carex that has any resemblance to Mr. Wilson's fig. *d;* but on the contrary, I say that no figure could be made more correctly to represent the MATURE nut of C. teretiuscula than that of Mr. Leighton.

As one who studies plants, I would advise such persons as are in the habit of making figures that should represent such characters as the swollen base of the style of a Carex, while standing on the nut, just to make some mark whereby we may distinguish the style from the nut itself; or perhaps we might mistake the whole of the nut for part of the style.

For an account of the discovery of Carex paradoxa in Yorkshire, Mr. Luxford refers us to a note by Mr. Spruce, (Phytol. 842). So far as regards the discovery of this plant, it is a matter of little or no importance, but what has been said on the subject would, *I think*, have been much better, if it had been correct. Mr. Spruce says, "it was first found by myself in Heslington fields, in April, 1841, and a few weeks after in Ascham bogs." Here I could inform Mr. Spruce when and by whom this plant had been found in Yorkshire long before the time that he has mentioned; but for the correctness of his statement, I will only refer the reader to Baines's 'Flora of Yorkshire,' for there he will find Ascham-bogs given as a station for the plant in question; and as this book was published in the year 1840, it will serve to show that this plant must have been discovered previous to 1841.

Mr. Luxford tells us that the stem of C. paniculata has three acute angles, with the interstices flat; while the angles of teretiuscula are obtuse, with projecting lines on the sides. He also tells us that the stems of the paradoxa resemble the latter. In this Mr. L. agrees with most of our writers on the British Carices; and indeed we are told in 'English Botany,' that C. teretiuscula takes its name from the circumstance of its having a stem of a peculiar form. I shall not say here how far the form of the stems of Carices may be taken into account as characters whereby to distinguish them as species; neither shall I say how far these forms are constant. But this I will say, that my Carex pseudo-paradoxa (*those specimens that were sent by Dr. Wood to Mr. Babington*) *has a stem that has three acute angles, with the interstices flat*, or, if I were to speak with exactness, I might say the interstices are concave. Mr. L. tells us that these characters indicate specific identity.

As regards the perigynia and nuts of the Carices in question, I might say, taking the rule and leaving out the exceptions, that the perigynia of C. paniculata and paradoxa are nearly the same, so far as the ribs are concerned, and their greater or less proportion of convexity is variable in both; in my pseudo-paradoxa and the teretiuscula the ribs are the same, but the former has a perigynium that is much broader at the base.

If we take a series of the nuts (that is to say what belongs to one specimen) of C. paniculata, paradoxa and my pseudo-paradoxa, it will be found that their resemblance is so close that it is not possible to distinguish them with certainty; and if, on the contrary, we take a series of the nuts of C. teretiuscula, we shall find their outline to be very different from the other three, the prevailing number will be found to resemble Mr. Leighton's figure of the nut of that species.

It must be understood that I here speak of the fruit of these Carices in a state of maturity: this I say with so much certainty, that I shall not have to retract the words by saying that "I am inclined to think" otherwise, as nothing is more easy than to know when the fruit of a Carex is mature.

As Mr. Luxford takes the 'London Catalogue of British Plants' as some authority in this disputed point, I hope that he will allow me to say, that the plant which I have called Carex pseudo-paradoxa is neither more nor less a species for being placed under C. teretiuscula as *var*. b. of that plant. I wonder that the compilers of that Catalogue did not do by these four Carices as they have done by some of our Salices, that is, to make *a*, *b*, *c* and *d* of them, and then tell us that their "proper typical form" is to be found in some foreign land !!

I am truly sorry to say that Mr. Luxford's note is of no value in settling the disputed point, *since he tells us that he does not know* whether the differences he has taken so much pains in pointing out, may not be attributed to the plants being examined in different states of maturity.

My Carex pseudo-paradoxa, differs from C. teretiuscula (WHEN MATURE) in its nut being narrowed from below the middle, and in the perigynium being broader and truncate at the base; it also differs from that plant in its stem having three *acute* angles, with their interstices *flat*. From C. paniculata it differs in its perigynium being differently ribbed and less distinctly bifid at the point, and in having narrower leaves. From C. paradoxa it will be found to differ in its perigynium being less distinctly ribbed on its inner side, and also in the form of its stem. And from all the other three it differs in its mode of inflorescence.* SAML. GIBSON.

Hebden Bridge, June, 1844.

ART. CCXXX. — *Notice of Presl's 'Hymenophyllaceæ.'*†

IN all and everything relating to ferns, the name of Presl is a guarantee for excellence. In saying this, we by no means assert that he is infallible: we could with little trouble lay our finger on several important errors into which he has fallen; one of the most inexcusable of these is his version of the venation of Ceterach: but we do assert that there is throughout his works a constant exhibition of the most comprehensive knowledge, of the most admirable power of seizing characters, of the most acute judgment and capability of generalizing, and of the most perfect fairness in citing all the authorities with which he is acquainted.

---

* Thus far we have given Mr. Gibson's letter entire, but we hope to be excused for omitting his concluding paragraph, as not bearing on the subject in dispute.—*Ed.*

† Hymenophyllaceæ. Eine Botanische Abhandlung, von PROF. DR. KARL B. PRESL. Prag. [Pamplin, Frith Street, London].

The work by which Presl first attained his reputation was published at Prague in 1836, under the well known title of 'Tentamen Pteridographiæ.' He there divides the ferns into five orders: — Filicaceæ, Hymenophyllaceæ, Marattiaceæ, Osmundaceæ and Ophioglossaceæ; of these the Filicaceæ alone are analyzed, the Hymenophyllaceæ being announced as the subjects of a future memoir, while the remaining orders are left for other botanists to elaborate. "Should it please Almighty God the Hymenophyllaceæ shall be discussed in a separate memoir: but I purpose leaving the remaining orders to the skilful hands of other historians." The memoir thus promised in 1836, was completed in 1842; and we consider it so excellent, that we trust no apology is necessary for giving *verbatim* a large portion of its contents.

Comparing this treatise with that upon the Filicaceæ, it is decidedly superior. In the earlier work there are combinations, both as sections, genera and subgenera, which will not bear the test of critical examination: but in the present work the groups are described with the utmost care, and perhaps are indebted for some portion of their greater value to the fact that they depend almost solely on the fructification. Presl was the first to systematize the venation of ferns, and carried away by the beauty, the novelty, and indeed by the intrinsic utility of this guide, he perhaps, in some instances, gave it too great an importance, and allowed it to take precedence of the characters of fructification. In the Hymenophyllaceæ he finds the venation more uniform, and is therefore driven back on the fructification; and the result of the application of his great analytical powers to so safe and certain a guide, is the institution of genera more definite and tangible than any previously promulged in any section of the filicoid plants.

We have already seen that the author considers the Hymenophyllaceæ a group as distinct from the other annulate ferns as are the Osmundaceæ. To this opinion we are scarcely prepared to subscribe. The capsule in these plants possesses a most distinct articulated ring, as in the true Polypodies: yet generally differs in being attached to the receptacle by a portion of its diameter, the ring not unfrequently passing transversely round the capsule, like a belt; whereas, in the Filicaceæ of Presl, it is almost invariably stipitate, its stipes generally appearing continuous with the ring. The receptacle in the Hymenophyllaceæ is free; while in the Filicaceæ it is almost invariably imbedded. And here it may be as well to observe, that every part of the vein in ferns seems liable to become a receptacle by the presence of capsules. In the Filicaceæ we find a distinct and apparently independent involucre; it does not appear to us to be the cuticle of the frond separated from the parenchyma by the pressure of the growing capsules, although the great similarity of its structure to that of the epidermis has been so often pointed out; but rather a separate and distinct part, as much so as the veins, the capsules or the scales: in the Hymenophyllaceæ the bivalved involucre is quite another affair; it is perfectly continuous with the edge of the frond, and is very evidently formed of its two cuticles. The office of the involucre in the Polypodies has not, we believe, been demonstrated with precision, and it is quite possible that the involucre in the Hymenophyllaceæ may perform exactly similar functions; but the parts are not identical, and the involucre of Hymenophyllum appears to us rather the analogue of the inflected margins of an Adiantum, or an Allosorus, than of the peltate involucre of a Polystichum. The texture of the frond in the Filicaceæ is generally somewhat coriaceous or slightly fleshy, and the transparent veins, when viewed from above, appear to be sunk in its substance: in the Hymenophyllaceæ the reverse is the case, the frond being very thin and membranous, and the veins stout, winged, prominent and opaque. Thus the structure of these interesting plants seems to lead us to the conclusion that they form a part of the Filicaceæ, or true ferns, while the points in which they differ from the rest are so numerous, that we are compelled to consider them the most distinct and detached division of that extensive and diversified order.

We are fully aware that exceptions occur to all these characters: for instance, Robert Brown's Loxsoma seems to have something of a fleshy or leathery frond, with free, setiform involucres and stipitate capsules; and other instances of departure from typical character might without difficulty be pointed out.

The Hymenophyllaceæ are divided by Presl into nineteen genera, composing two tribes, Trichomanoideæ and Hymenophylloideæ; the first of these is again divided into two sections, Trichomaneæ and Didymoglosseæ. The genera of Trichomaneæ are these: Feea and Hymenostachys of Bory, Didymoglossum of Desvaux, and Lecanium, Cardiomanes, Trichomanes (restricted), Ragatelus, Cephalomanes, Neurophyllum, Microgonium, Abrodictyum, Meringium and Hemiphlebium of Presl. The genera of Hymenophylloideæ are Leptocionium, Myrmecostylum, Ptycophyllum, Hymenophyllum (restricted), Sphærocionium and Hymenoglossum of Presl.

The characters given to the Trichomanoideæ are these.*

---

* We prefer giving the quotations untranslated, believing that all botanists who may honour us with a perusal of these pages, will prefer the original to any version which it is in our power to make.

"Sorus in substantia ipsa frondis seu intra ejus laminas immersus, aut in apice venæ venulæve sessilis. Indusium tubulosum, tubo integro, limbo integro aut bipartito. Receptaculum filiforme, exsertum, inferne capsulis spiraliter obsitum, cæterum nudum punctis excavatis spiraliter ambientibus ornatum."—p. 10.

It will be observed that the main distinction between the two tribes is found in the tubular involucre of the Trichomanoideæ, the tube being invariably entire, and its limb either entire or bipartite, the former character distinguishing the Trichomaneæ, the latter the Didymoglosseæ. In this definition we feel scarcely inclined fully to concur, since in the first group we almost invariably find the limb of the involucre bipartite, or at least emarginate on each side, at its junction with the wing or margo.

Genus, FEEA, *Bory*.

"Frondes dissimiles. Steriles: Venæ internæ, pinnatim alternæ, simplices aut sæpius furcatæ. Fertiles: Venæ creberrimæ, brevissimæ, pedicelliformes, soriferæ. Sorus in vena pedicelliformi apicalis. Indusium clavato-infundibuliforme, ore crenulato. Receptaculum exsertum, tenuiter clavatum, basi capsuliferum. Capsulæ sessiles, lenticulares. Rhizoma adscendenti-repens, polyrhizum. Frondes sparsæ, valde approximatæ ita ut fasciculatæ videantur, transparentes, stipitatæ, steriles a fertilibus difformes. Frons sterilis profunde pinnatifida aut pinnata, laciniis linearibus obtusis obscure repando-crenulatis, pinnis adnatis ovato-oblongis obtusis crenulatis, stipite basi tereti, in una facie supra canaliculato in altera convexo, rachi hinc plana illinc convexa, costis tenuibus vix prominulis, venis internis pinnatim alternis angulo acuto patentibus simplicibus aut sæpius furcatis venulisque ante marginem frondis desinentibus, parenchymate e cellulis hexagono-subrotundis constructo. Frons fertilis longius stipitata, ad meram rachidem reducta, venis brevissimis creberrimis pedicelliformibus soriferis. Indusium clavato-infundibuliforme, sæpe incurvum, ore crenulato. Receptaculum indusio triplo longius, filiformi-subclavatum, basi capsuliferum, reliqua longitudine punctis impressis spiraliter ambientibus minutis, inde sub microscopio tantum visibilibus, ornatum."—p. 10.

1. F. polypodina, *Bory*, *Dict. Class. t.* 68. Trich. spicatum, *Hedw. Sw.* T. spicisorum, *Desv.* T. elegans, *Rudge, partim. Hook. Exot. Fl. t.* 52.
2. F. nana, *Bory*, *Dict. Class.* 1, *t.* 69, *f.* 1. Tri. botryoides, *Rich. in Kaulf. Herb.*

Genus, HYMENOSTACHYS, *Bory*.

"Frondes dissimiles. Steriles: Venæ internæ, pinnatim alternæ, simplices aut sæpius furcatæ. Fertiles: Venæ creberrimæ, parallelæ, simplices, apice soriferæ. Sorus intramarginalis, immersus. Indusium campanulatum, ore truncato integro. Receptaculum exsertum, filiforme, basi capsuliferum. Capsulæ sessiles. Stirpes tropicæ, americanæ, speciosæ. Rhizoma adscendenti-repens, polyrhizum. Frondes sparsæ quidem sed valde approximatæ ita ut fere fasciculatæ videantur, stipitatæ, hygroscopicæ, transparentes, steriles a fertilibus difformes. Frons sterilis pinnata aut pinnatifida, pinnis adnatis laciniisque oblongis obtusis inæqualiter angulato-dentatis repandisve; costæ tenues, vix prominulæ; venæ internæ, tenues, pinnatim alternæ, angulo acuto patentes, simplices aut sæpius furcatæ, venulisque ante marginem desinentes. Frons fertilis linearis, angusta, venis creberrimis parallelis simplicibus apice soriferis. Stipes in fronde fertili longior. Rachis ...... Parenchyma ...... Sori immersi, intramarginales. Indusium campanulatum. Receptaculum indusio triplo longius."—p. 10.

1. H. elegans. Trich. elegans, *Rudge*, *partim*, exclusa nempe fronde fructifera dextra et figura 3 et 4.

2. H. osmundioides. H. diversifrons, *Bory*. T. osmundioides, *Poir*.

Genus, Lecanium, *Presl.*

"Costa nulla. Venæ flabellatæ, creberrimæ, subparallelæ, pluries furcatæ, crassiores apice soriferæ. Venulæ tenuissimæ in superiori parte frondis libere exorientes et squamas duas oppositas supramarginales pateræformes patentes gerentes. Sorus intramarginalis, immersus. Indusium lineari-cylindricum, elongatum, limbo hypocraterimorpho patente crenulato. Capsulæ receptaculo filiformi indusium longe excedenti undique affixæ, sessiles, augulato-lenticulares, valde excentrice (pone marginem) affixæ. Rhizoma repens, ramosum, filiforme, ramisque radiculis copiosissimis fuscis piliformibus vestitum. Frondes sparsæ, distantes, hygrometricæ, flabellatæ, irregulariter lobatæ, in pagina utraque conformes, glabræ, transparentes. Stipes brevissimus (unitrilinealis), compressus, paleis fuscis copiosissimis piliformibus brevibus vestitus. Rachis et costa nullæ. Venæ flabellatæ, creberrimæ, pluries furcatæ, venulæ aliæ soriferæ aliæ steriles furcatim in marginem excurrentes. Venulæ aliæ internæ, in superiori parte frondis exorientes, plerumque binæ, tenuissimæ, liberæ, gerentes in margine frondis organum peculiare constitutum e squamis duabus oppositis sessilibus liberis pateræformibus concavis patentibus tenuiter membranaceis. Parenchyma e cellulis hexagonoideis, in limbo indusii e cellulis subquadratis constructum. Indusium elongato-cylindricum v. lineare, immersum, limbo libero. Receptaculum indusio plus quam triplo longius, filiforme, rarissime conservatum, sed usque ad orem indusii abruptum. Capsulæ totam fere longitudinem receptaculi, saltem longe supra os indusii capsuliferum. Sporæ tetraedricæ. Species unica, antillana."—p. 11.

1. L. membranaceum. Trich. membranaceum, *Lin.*

Genus, Cardiomanes, *Presl.*

"Costa nulla. Venæ pedato-flabellatæ, crebræ, furcatæ, steriles ante marginem frondis apice obtuso desinentes. Sorus intramarginalis, immersus. Indusium campanulatum, ore integrum. Capsulæ lenticulares, receptaculo clavato obtuso demum exserto undique affixæ. Species unica Novam Zeelandiam inhabitans, elegantissima. Rhizoma late repens, ramosum, polyrhizum, radicibus flexuosis radiculis copiosissimis capilliformibus fuscis vestitis simplicibus ramosisve. Frondes sparsæ, distantes, glaberrimæ, vix aut non hygrometricæ, firmiores et minus transparentes quam omnes reliquæ Hymenophyllaceæ, longe stipitatæ, reniformi-subrotundæ, integerrimæ, in pagina utraque conformes. Stipes usque semipedalis, inferne teres, medio et superne anceps, apice frondis lamina decurrente marginatus, glaberrimus. Costa media nulla. Venæ ex apice stipitis pedato-flabellatim exeuntes, pluries furcatæ, angulo acutissimo divisæ, venulis subinde omnibus soriferis, sterilibus ante marginem frondis apice obtuso desinentibus. Sorus intramarginalis, immersus. Indusium campanulatum, ore integro. Receptaculum indusio duplo longius, exsertum, clavatum, obtusum, rectum, rigidum, undique usque ad apicem capsuliferum, capsulis delapsis punctis impressis spiraliter ambientibus notatum. Capsulæ lenticulares, sessiles."—p. 12.

1. C. reniforme. Trich. reniforme, *Forst.*

Genus, TRICHOMANES.

"Venæ pinnatæ, alternæ, simplices ramosæve, steriles apice acuto libero desinentes. Sorus intramarginalis immersus aut supramarginalis exsertus. Indusium infundibuliformi-cylindraceum, limbo integro vel crenulato. Receptaculum filiforme, elongatum, indusium excedens, inferne capsuliferum. Capsulæ lenticulares, sessiles. Rhizoma repens, paleaceo-pilosum, sæpe (in T. crispo, T. plumoso &c.) obliquum crassum simplex angulatum, sæpissime filiforme teres ramosum elongatum. Radices filiformes, simplices aut ramosæ, radiculis piliformibus. Stipes varie longus, in plurimis teres, in T. pennato, T. Sellowiano et aliis in una pagina canaliculatus in altera convexus, in T. plumoso et T. Henkaeano (an exsiccatione?) acute triangulus. Frons hygroscopica, tenera, transparens, simplex aut varie divisa, nempe lobata, pinnatifida, pinnata usque supradecomposita, paginis conformibus. Venæ vix prominulæ, e costa pinnatim exorientes, alternæ, steriles venulisque ante marginem frondis libere desinentes, in paragrapho prima crebræ l. creberrimæ fere parallelæ uni—pluries furcatæ, venulis parum divergentibus, in paragrapho secunda et tertia distantes multo parciores pinnatim divisæ, venulis divergentibus. Cellulæ parenchymatis hexagonoideæ, latitudine duplo triplove longiores, minutæ et minutissimæ. Sorus aut intramarginalis seu frondi immersus, aut supramarginalis seu fronde obliterata apice venæ venulæve subdenudatæ insidens. Indusium in Achomane infundibuliforme ore integro simplici, in Eutrichomane et Pachychæto infundibuliformi-cylindraceum oris crenulati repandive margine patentissimo subreflexo, unde limbus hypocraterimorphus quodammodo provenit. Receptaculum indusio duplo triplo quadruplove longius, sæpissime setaceum flexuosum, rarius subclavatum, basi intra indusium capsuliferum, in parte superiori nuda punctis oblongis impressis spiraliter ambientibus notatum."—p. 13.

The author then recapitulates the characters of the genus Trichomanes, as they are given by Linneus, Swartz, Bernhardi, Willdenow, Robert Brown, Kaulfuss, Sprengel and Endlicher, showing how completely they contradict each other, and how inadequate they are to the correct definition of a genus. He divides the restricted genus Trichomanes into three named sections, as under.

* ACHOMANES.

1. T. pellucidum, *Kunze.*
2. T. Kaulfussii, *Hook.* T. lucens, *Hook. olim.* T. astylum, *Kaulf. in Sieb. Fl. Mixt. n.* 340.
3. T. fastigiatum, *Sieb. Syn. Fil. n.* 144.
4. T. heterophyllum, *Willd.*
5. T. cristatum, *Kaulf.*
6. T. Martiusii, *Presl.* "T. fronde lineari-lanceolata elongata utrinque angustata stipiteque pilis patentibus hirsuta profunde pinnatifida, laciniis horizontalibus angulo acuto interstinctis oblongis obtusis integerrimis contiguis, inferioribus decrescentibus, summis confluentibus, venis parallelis, receptaculis setaceis longissimis, frondibus novellis (nondum evolutis) hirsutissimis, rhizomate crasso lignoso polyrhizo adscendente. T. pilosum, *Mart. Crypt. Bras. p.* 104, *t.* 68, fig. dextra, nec Raddi.

"Habitat in Brasiliæ provincia Rio Negro in montibus Arara-Coara et Cupati fluvio Japurà imminentibus, ubi Januario fructificans collegit celeb. Martius"—p. 36.

7. T. plumula, *Presl.* " T. fronde oblongo-lanceolata elongata apice angustata stipiteque pilis adpressis articulatis simplicibusque hirsuta pinnata aut profundissime pinnatifida apice pinnatifida, pinnis oblongo-linearibus obtusis integerrimis contiguis angulo acutissimo interstinctis horizontalibus, inferioribus deorsum versis, infimis 2—3 utrinque subito decrescentibus, venis parallelis, receptaculis setaceis longissimis scabris, rhizomate crasso lignoso polyrhizo horizontali hirsutissimo. T. pilosum, *Mart. Crypt. Bras. p.* 104, *t.* 68, figura sinistra, nec Raddi.

" Habitat in Brasilia cum præcedente."—p. 36.

8. T. pilosum, *Raddi.*

9. T. crispum, *Lin.*

10. T. plumosum, *Kunze.*

11. T. Haenkei, *Presl.* " T. fronde oblongo-lanceolata elongata acuta pubescente pinnata basi obtusa, pinnis adnatis angulo rotundato interstinctis oppositis alternisque oblongis obtusissimis crenulatis parallelis contiguis apice fructiferis, infimis æquilongis distantibus deflexis, reliquis horizontalibus, venis di- trichotomis, fructiferis simplicibus, receptaculis longissimis, stipite triquetro rachique hinc convexa illinc canaliculata pilis adpressis hirsuto. T. crispum, *Presl*, *Reliq. Haenk.* 1, *p.* 69.

" Habitat in montanis huanoccensibus Peruviæ, ubi legit beatus Haenke."—p. 36.

12. T. Sellowianum, *Presl.* "T. fronde lineari-lanceolata elongata acuta profunde pinnatifida basi obtusa, laciniis oblongis obtusis inæqualiter denticulatis ciliatis undulatis sinu rotundato minuto interceptis alternis contiguis horizontalibus, infimis paululum minoribus deflexis, venis di- trichotomis, in una facie costaque pubescentibus, receptaculis longissimis, stipite hinc convexo illinc canaliculato rachique convexa pilis adpressis hirsuto. Trichomanes, *Herb. Reg. Berol. Bras. n.* 197.

" Habitat in Brasilia, ubi legit Sellow."—p. 37.

13. T. asplenioides, *Presl.* " T. fronde lineari-lanceolata elongata glabra pinnata, pinnis alternis oppositisque sessilibus oblongis obtusis crenulatis inæquilateris inferne angustioribus acutis superne latioribus truncatis auriculatis, fructiferis irregulariter fissis aut laceris, venis creberrimis furcatis venulisque crassiusculis, rachi inferne hinc canaliculata hinc tereti, stipite tereti basi hirsuto, rhizomate brevi oblique repente.—*Cuming*, *Pl. Exs. Philipp. n.* 184.

" Habitat in insulis Philippinis, ubi legit clar. Cuming."—p. 37.

14. T. dimidiatum, *Presl.* " T. fronde lineari longe angustato-acuminata pinnata, pinnis petiolulatis oblongis obtusis acuminatisve pinnatifidis basi inferne dimidiatis integerrimisque, basi superne truncatis, laciniis subbilobis lobisque bidentatis obtusis, infima majori auriculæformi, rachi hinc canaliculata illinc convexa stipiteque brevi villoso-paleacea, soris exsertis subpedicellatis, indusii limbo erecto. *Cuming*, *Pl. Exs. Philipp. n.* 129.

"Habitat in insulis Philippinis præsertim in insula Luzon, ubi legit clar. Cuming."—p. 38.

15. T. javanicum, *Blume.* T. rigidum, *Wall. Cat. n.* 161.

** EUTRICHOMANES.

16. T. Bojeri, *Hook. et Grev.* T. undulatum, *Wall.*

17. T. digitatum, *Sw.* T. lanceum, *Bory.*

18. T. saxifragoides, *Presl.* " T. fronde glaberrima orbiculato-flabellata digitato-quinquefida basi acuta, laciniis lobatis dentatisve, lobis dentibusque obtusis, soro sub-

solitario, indusii limbo patente subrepando, stipite laminam superante rhizomateque filiformi. *Cuming. Pl. Exs. Philipp. n.* 256.

"Habitat in insulis Philippinis, præcipue in insula Luzon, ubi legit clar. Cuming." —p. 39.

19. T. palmatum, *Presl.* "T. fronde oblonga subramosa glaberrima pinnata, pinnis petiolulatis remotis, infimis una- duabus digitato-multifidis basi cuneatis, laciniis linearibus obtusis, mediis (si adsunt) duabus oppositis trifidis, laciniis cuneato-linearibus obtusis subcrenatis, superioribus fructiferis bifidis simplicibusque laciniisque cuneato-linearibus, soris immersis, indusii infundibuliformis limbo patente integro. — *Cuming, Pl. Exs. Philipp. n.* 209.

"Habitat in insulis Philippinis, præsertim in insula Luzon, ubi legit clar. Cuming."—p. 39.

20. T. Hookeri, *Presl.* T. muscoides, *Hook. et Grev. Ic. Fil. t.* 179.

21. T. erosum, *Willd.*

22. T. parvulum, *Poir.* T. sibthorpioides, *Bory.*

23. T. Thouarsianum, *Presl.* "T. fronde ovata obtusa glaberrima profunde pinnatifida basi acuta, laciniis utrinque duabus oppositis terminalique cuneatis bifidis, lobis linearibus integris dentatisve dentibusque emarginatis, indusii limbo patente integro, stipite lamina breviore rhizomateque filiformi.

"Habitat in insula Borbonia, ubi legit Du Petit Thouars."—p. 40.

24. T. Poeppigii, *Presl.* "T. fronde lineari-lanceolata obtusa sessili pinnatifida pilis apice stellato-ramosis (umbraculiformibus) ciliata apice angustata basi acuta, laciniis oblongis obtusis subrepandis superne obsolete unidentatis, venis pinnatis, laciniarum inferiorum superiorumque simplicibus, indusii limbo patente integro, rhizomate filiformi piloso. T. sinuosum, *Poeppig, Fil. Amer. Exs. Kunze, Fil. Poepp. in Schlecht. Linnæa*, IX. *p.* 103.

"Habitat in Peruvia, ubi legit clar. Poeppig."—p. 41.

25. T. sinuosum, *Rich.* T. incisum, *Kaulf.*

26. T. cognatum, *Presl.* "T. fronde oblongo-lanceolata obtusa glabra pilisve bitrifidis ciliata pinnatifida basi in stipitem angustato-decurrente, laciniis ovato-oblongis obtusis obtuseque dentatis sinu obtuso interstinctis, venis simpliciter ramosis, soris immersis, indusii infundibuliformis limbo truncato, stipite inferne filiformi supra basim articulato, rhizomate angulato paleaceo-piloso.

"Habitat in Serra d'Estrella Brasiliæ, ubi legit Beyrich."—p. 41.

27. T. lucens, *Sw.*

28. T. alatum, *Sw.*

29. T. Bancroftii, *Hook. et Grev.* T. coriaceum, *Kunze.* T. pinnatifidum, *Willd. Herb. n.* 20, 209.

30. T. Ankersii, *Parker.*

31. T. intramarginale, *Hook. et Grev.*

32. T. luzonicum, *Presl.* "T. fronde oblongo-lanceolata obtusa glaberrima profundissime bipinnatifida, laciniis primariis lanceolatis obtusis, secundariis linearibus integerrimis obtusis emarginatisve, stipite brevi apice alato, soris exsertis, indusii limbo patente crenulato, receptaculo recto. *Cuming, Pl. Exs. Philipp. n.* 98.

"Habitat in insula Luzon, ubi legit clar. Cuming."—p. 42.

33. T. acutum, *Presl.* "T. fronde oblongo-lanceolata obtusa glaberrima profundissime bipinnatifida basi pinnata, laciniis primariis pinnisque oblongo-lanceolatis acuminatis, secundariis oblongis bi- trilobis, lobis linearibus acutis mucronulatis integer-

rimis, soris exsertis, indusii limbo patente integro, receptaculo recto. *Cuming, Pl. Exs. Philip. n.* 219.

"Habitat in insulis Philippinis, præsertim in insula Luzon, ubi legit clar. Cuming."—p. 42.

34. T. venosum, *Brown.*

35. T. Belangeri, *Bory.*

36. T. melanotrichum, *Schlecht.*

37. T. brachypus, *Kunze.* T. radicans, *Hook. et Grev. Ic. Fil. t.* 218.

38. T. radicans, *Sw.*

39. T. pyxidiferum, *Lin.*

40. T. ambiguum, *Sieb. Syn. Fil. n.* 143.

41. T. braziliense, *Desv.*

42. T. Bauerianum, *Endl.*

43. T. trichoideum, *Sw.*

44. T. tenerum, *Sp.*

45. T. exsectum, *Kunze.*

46. T. angustatum, *Carmich.*

47. T. Mandioccanum, *Raddi.*

48. T. scandens, *Linn.* T. radicans, *Kunze, Syn. Fil. Poepp.* Hymenophyllum radicans, *Poeppig. Fil. Exs.*

49. T. umbrosum, *Wall.*

50. T. strictum, *Menz.*

51. T. tamarisciforme, *Jacq.*

52. T. Achilleifolium, *Willd.*

53. T. longisetum, *Bory.*

54. T. Millefolium, *Presl.* "T. glaberrimum, fronde oblongo-lanceolata acuta tripinnata, pinnis pinnulisque primariis petiolulatis oblongo-lanceolatis obtusis, secundariis profundissime pinnatifidis l. pinnatis, laciniis anguste linearibus obtusis integris bifidisque, soris exsertis pedicellatis, indusii cylindracei limbo patente brevissimo, receptaculo setaceo brevi, stipite rachibusque tereti utrinque alato, rhizomate lignoso. *Cuming, Pl. Exs. Philip. n.* 162.

" Habitat in insulis Philippinis, verosimiliter in insula Luzon, ubi legit clar. Cuming."—p. 43.

55. T. Apiifolium, *Presl.* " T. fronde glaberrima oblongo-lanceolata acuta tripinnata, pinnis lineari-oblongis pinnulisque anguste oblongo-lanceolatis petiolulatis acutis, secundariis anguste linearibus obtusis, infimis subbifidis, soris exsertis pedicellatis, indusii turbinati ore truncato, receptaculo setaceo indusio duplo longiore, stipite tereti rachibusque villoso, primaria apice secundariis tertiariisque alatis, rhizomate crasso lignoso obliquo frondes aggregatos gerente. *Cuming, Pl. Exs. Philip. n.* 137 *et n.* 190.

" Habitat in insulis Philippinis, verosimiliter in insula Luzon, ubi legit clar. Cuming."—p. 44.

56. T. bifidum, *Vent.*

57. T. eminens, *Presl.* " T. fronde oblongo-lanceolata acutissima tri- quadripinnata, pinnis glaberrimis lineari-lanceolatis acuminatis pinnulisque primariis lanceolatis obtusis petiolulatis, secundariis anguste linearibus obtusis, infimis superioribus subbifidis, rachibus inferne teretibus paleaceo-villosis, superne glabris alatis, soris exsertis pedicellatis, indusii infundibuliformis limbo erecto tubum subæquante, receptaculo setaceo, stipite tereti paleaceo-hirsuto. *Cuming, Pl. Exs. Philip. n.* 207.

" Habitat in insulis Philippinis verosimiliter in insula Luzon, ubi legit clar. Cuming."—p. 44.

58. T. fœniculaceum, *Bory.*

59. T. Meifolium, *Bory.*

60. T. intermedium, *Kaulf.*

*** PACHYCHÆTUM.

61. T. Luschnatianum, *Presl.* " T. fronde sessili oblongo-lanceolata acuta pinnata basi obtusa, pinnis subsessilibus lanceolatis acuminatis profunde pinnatifidis, laciniis inferioribus ovatis obtusis inferne lobatis superne dentatis, lobis dentatis, dentibus obtusis, soris immersis, indusii infundibuliformis limbo erecto, receptaculo crassiusculo scabro, rachi marginata, rhizomate tereti scandente.

" Habitat in Brasilia ad Rio de Janeiro, ubi legit Luschnat."—p. 45.

62. T. rigidum, *Sw.*

63. T. firmulum, *Presl.* " T. fronde oblongo-lanceolata acuminata glaberrima pinnata basi obtusa, pinnis subpetiolulatis acutis profunde pinnatifidis, laciniis lineari-cuneatis tri- bifidis indivisisque lobisque acutiusculis, venis pinnatim ramosis, soris lateralibus, indusii infundibuliformis limbo erecto integro, receptaculo crassiusculo scabro, stipite rachique primaria tereti. T. rigidum, *Beyrich, herb.*

" Habitat in Serra d'Estrella Brasiliæ, ubi legit Beyrich."—p. 46.

64. T. pyramidale, *Wall.*

65. T. speciosum, *Willd.*

66. T. brevisetum, *Spr.*

Genus, RAGATELUS, *Presl.*

" Venæ prominulæ, pinnatæ, simplices, apice libero desinentes. Sorus immersus. Indusium infundibuliformi-campanulatum, limbo patente subhypocraterimorpho repando. Receptaculum indusio duplo triplove longius, setaceum, basi turbinato-incrassatum transverse striatum, apice ovoideo-incrassatum bifidum, laciniis inæqualibus obtusis oppositis setulam pallidam æquilongam interjectam foventibus. Capsulæ lenticulares, sessiles, basi incrassatæ receptaculi affixæ. Rhizoma ignotum, verosimiliter tamen obliquum repens. Frondes in apice rhizomatis aggregatæ, a beato Romano Adolpho Hedwig gregariæ dictæ, qui terminus tamen frondes fasciculatas in Hymenophyllaceis inusitatas vix designat. Stipes uni- bipollicaris, pilis patentibus hirsutus. Frondis limbus duos usque semitertium pollicem longus, basi pollicem plus minus latus, ovato-triangularis aut ovatus aut oblongus aut lineari-lanceolatus, acutus aut obtusus, pinnatus apicem versus pinnatifidus. Pinnæ ovato-oblongæ, obtusæ, pinnatifidæ, sessiles aut adnatæ, oppositæ, suboppositæ alternæque, approximatæ, inferiores plerumque horizontales; laciniæ frondis superiores pinnis conformes sed in rachidæ decurrentes et versus apicem frondis confluentes, laciniæ pinnarum lineares aut cuneatæ sinu rotundato interstinctæ simplices aut bilobæ lobisque linearibus obtusæ pilis satis longis flexuosis articulatis e tuberculo emergentibus simplicibus aut apice trifidis ciliatæ. Parenchyma transparens, e cellulis subrotundis constructum. Rachis inferne nuda et verosimiliter teres, superne prominula. Costa flexuosa, fusca. Venæ pinnatim exorientes, simplices, fuscæ, apice libero ante marginem frondis desinentes, sæpe pilis supra descriptis, brevioribus tamen, adspersæ. Sori in parte frondis superiori obvenientes, immersi, mediocres. Indusium pilis supra descriptis ciliatum. Receptaculum fuscum, in parte setacea læve et flexuosum."—16.

1. R. crinitus. Trichomanes crinitum, *Sw. Hedwig.*

Genus, CEPHALOMANES, *Presl.*

"Venæ pinnatim exorientes, creberrimæ, prominulæ, uni- bifurcatæ, venulisque sterilibus apice obtuso liberæ. Sorus in dentibus frondis obliteratis terminalis, pedicellatus. Indusium cylindraceum, limbo patente integro. Receptaculum indusio dimidio duplove longius, rectum, rigidulum, cylindricum, apice in globum incrassatum, basi capsuliferum. Capsulæ sessiles, lenticulares. Rhizoma oblique repens, teretiusculum, intense fuscum, apice paleaceo-hirsutum, inferne glabrum, stipitibus aut illorum residuis aggregatis radicibusque duas trientes lineæ crassis filiformibus flexuosis rigidis tam arcte obtectum, ut vix aut non conspicitur. Stipites pollicares, semilinea paululum crassiores, teretes, paleis piliformibus fuscis flexuosis usque sesquilineam longis adspersi, demum glabrati, basibusque residuis glabris rigidis in rhizomate aggregati, ut fasciculati apparent, quamquam revera sparsi sunt. Frons (in strictissimo sensu) sex- septempollicaris, pollicem lata aut angustior, arcuato-subfalcata, exsiccata nigricans, lineari-lanceolata, acuta, basi angustata, pinnata. Pinnæ (exceptis infimis paullo distantibus) contiguæ, alternæ, petiolulo vix semilineali insidentes, oblongæ, rotundato-obtusæ, inæquilateræ, latere superiori latiore basi truncato, sterili apiceque inæqualiter anguste obtuseque dentato, fertili usque supra medium sorifero subinde dentes laciniæformes elongatos anguste lineares gerenti, apice eodem modo ac in sterili dentato, latere inferiore duplo angustiore laciniato basi acuto vel acutissimo apice ut in latere superiore dentato, laciniis sinu lato interceptis anguste linearibus (exsiccatione apparenter setaceis) acutis simplicibus aut subinde bilobis, lobis divergentibus linearibus acutis. Pinnæ infimæ sensim decrescentes oblongo- et inæquilatere obovatæ. Rachis inferne semiteres (hinc planiuscula illinc convexa), paleis piliformibus sesquilinealibus flexuosis fuscis adspersa, superne teres et glabra. Costo vix prominula, basi satis crassa. Venæ pinnatim exorientes, creberrimæ, uni- bifurcatæ venulisque subparallelæ, in quolibet dente laciniave excurrentes, steriles apice obtusæ liberæ. Parenchyma e cellulis rotundato-hexagonoideis constructum. Sori solummodo in margine superiori pinnarum, apice tamen excepto, obvenientes, exserti, pedicello brevissimo quanquam bene conspicuo insidentes. Indusium linea paululum longius, cylindraceum, basi acutum, limbo brevissimo patente integro. Receptaculum indusio dimidio aut duplo longius, rectum, rigidum, setaceo-cylindricum, apice in globum plus minus regularem incrassatum, basi capsuliferum. Capsulæ lenticulares, sessiles, in facie superiori stellato-multiradiatæ."—p. 17.

1. C. atrovirens, *Presl.*

This, the only known species, was brought by our countryman, Mr. Cuming, from the Philippine islands. The description of the genus in this instance serves also for that of the species: the number in Mr. Cuming's list is 169.

Genus, NEUROPHYLLUM, *Presl.*

"Venæ creberrimæ, parallelæ, simplices aut furcatæ, in denticulos frondis excurrentes. Venulæ secundariæ tenuissimæ, venas venulasque transverse arcuatim conjungentes. Sorus denticulo frondis adnatus, subpedicellatus, marginalis. Indusium infundibuliforme, ore integrum vel læviter crenatum. Capsulæ receptaculi clavato-filiformis exserti basi affixæ, sessiles, excentrice disco adnatæ, lenticulares. Species tropicæ, americanæ, typica in Americæ parte occidentali et orientali obveniens. Rhizoma repens, polyrhizum, gemma subglobosa paleis fusco-nigricantibus filiformibus dense obtecta. Frondes sparsæ, approximatæ, stipitatæ, vix aut non hygroscopicæ, transparentes, simplices aut pinnatæ, margine mucronato—creberrimeque denticulatæ. Stipes digitalis usque spithamæus, faciem frondis indicans, hinc canaliculatus aut planus, illinc convexus. Costa hinc acutangula, illinc convexa, sæpe apice elongata nudaque et gemmam globosam fusco-paleaceam radicantem gerens. Denticuli acuminato-cuspidati, fructiferi, alternis aut pluribus interpositis sterilibus. Venæ creberrimæ, parallelæ, simplices aut furcatæ venulisque cum venula marginante anastomosantes ac in denticulos excurrentes. Venulæ secundariæ tenuissimæ, creberrimæ, venas venulasque conjungentes, extrorsum arcuatæ, subinde ex arcu ramulum brevissimum obtusum liberum emittentes, subinde in medio decursu libere et acutiuscule desinentes. Parenchyma e cellulis subrotundis constructum. Sorus apici dentis insidens, pedicellatus aut subpedicellatus aut sessilis. Receptaculum indusio duplo—triplo—quadruplove longius, basi capsuliferum, reliquis longitudine cicatriculis spiraliter dispositis impressis notatum, in prima specie filiformi-setaceum, in altera clavatum."—18.

1. N. Vittaria. Trichomanes Vittaria, *DeCand.*

2. N. pinnatum. Trichomanes pinnatum, *Hedw.* T. rhizophyllum, *Cav.* T. floribundum, *Humb.*

3. N. pennatum. Trichomanes pennatum, *Kaulf.*

Genus, Microgonium, *Presl.*

"Venæ internæ, crebræ, pinnatæ, pluries furcatæ, venulis apice infra marginem frondis utrinque ramum arcuformem cum opposito anastomosantem emittentibus, ramo hocce seu arcu latere inferiori plures venulas secundarias tenuissimas costam versus aut intra furcaturam decurrentibus et libere in varia altitudine desinentibus emittente. Sorus immersus. Indusium infundibuliformi-cylindraceum, limbo patente repando. Receptaculum setaceum, indusio longius, basi capsuliferum. Capsulæ lenticulares, sessiles. Rhizoma repens, filiforme, tenue, paleis piliformibus nigro-fuscis tomentellum. Stipes quinque—octolinealis, paleis piliformibus intense fuscis patentibus dense tomentello-pubescens, inferne teres, apice fronde decurrente alatus. Frons usque semipollicaris, ex acuta cuneatave basi ovata, rotundato-obtusa, inæqualiter quinque—octoloba seu grosse crenata, lobis vel crenis rotundato-obtusis obsolete repandis, sinubus obtusis plicatis planisque. Costa vix ulla vel brevissima, tenuis, paululum prominula. Venæ internæ, crebræ, e lateribus et ex apice costæ flabellatim exorientes, pluries furcatæ. Venulæ tenues, infra marginem frondis utrinque arcum seu ramum arcuformem cum opposito anastomosantem emittentes, arcu hocce seu ramo latere inferiori plures ramulos seu venulas secundarias tenuissimas intra furcaturam venularum aut versus costam decurrentibus et libere in varia altitudine desinentibus emittente. Parenchyma e cellulis hexagonoideo-subrotundis constructum. Sori in apice frondis obvenientes, pauci (unus—duo), immersi. Indusium lineam longum, infundibuliformi-cylindraceum, limbo patente repando. Receptaculum setaceum, basi capsuliferum, indusio longius, sed integrum non observatum. Capsulæ lenticulares, in statu destructionis visæ."—p. 19.

1. M. cuspidatum. Trichomanes cuspidatum, *Willd.*

2. M. Berteroanum, *Presl.* "M. fronde oblongo-lanceolata obtusa emarginatave grosse crenata glaberrima basi angustata, crenis subæqualibus obsolete emarginatis, stipite brevi rhizomateque paleaceo-tomentello. Trichomanes reptans, *Balbis herb.*

"Habitat in insula S. Domingo, ubi legit infelix Bertero."—p. 46.

Genus, Abrodictyum, *Presl.*

"Venæ prominulæ, ramosæ. Venulæ crebræ, tenuissimæ, flexuosæ, in maculas irregulariter oblongas anastomosantes, ramosæ, venulis secundariis pone marginem longitudinaliter decurrentibus, alliis intra maculas brevibus liberis obtusis. Cellulæ intra maculas transverse lineari-hexagonæ. Sorus exsertus, pedicellatus. Indusium infundibuliforme, limbo patente vel patentissimo integerrimo. Receptaculum indusio triplo longius, setaceum, basi capsuliferum. Capsulæ sessiles, lenticulares. Rhizoma lineam fere crassum, breve, oblique repens, teres, fuscum, paleis piliformibus fuscis vestitum, radices filiformes flexuosas simplices breves firmulas emittens, apice apparenter fasciculum frondium gerens, quæ vero tantum aggregatæ et revera sparsæ sunt. Stipes circiter pollicaris, filiformis, teres, glaber, basi ima hinc inde palea piliformi minuta adspersus. Frons (in strictissimo sensu) hygroscopica, elastica, transparens, quadri- quinque-pollicaris, glaberrima, oblongo-lanceolata vel lineari-lanceolata, acuta, tripinnata, apicem versus bipinnata, apice pinnata. Pinnæ infimæ petiolulo semilineali instructæ, ovatæ, reliquæ sessiles, inferiores et mediæ ovato-lanceolatæ bipinnatæ, superiores lanceolatæ pinnatæ, supremæ lineares integerrimæ acutæ. Pinnulæ primariæ et secundariæ sessiles, lineares acutæ, integerrimæ, semilineam latæ, pallide virides (in sicco). Rachis primaria inferne teres filiformis, in reliquo decursu secundariisque tertiariisque foliaceo-alata. Vena in qualibet pinnula solitaria, prominula, ramosa. Venulæ tenuissimæ, flexuosæ, in maculas oblongas sæpe irregulares subinde ad figuram hexagonoideam accedentes anastomosantes, venulis secundariis venulam inframarginalem longitudinaliter et undique decurrentem efficientibus, aliis intra maculas brevibus libere obtuse recteque desinentibus. Parenchyma e cellulis diversis constitutum, cellulæ marginales et spatiorum angustorum macularum sunt nempe hexagonoideo-rotundatæ, spatiorum latiorum macularum sunt transversæ et lineari-hexagonoideæ. Sori laterales, exserti, pedicello usque fere semilineali instructi, mediocres, pedicello foliaceo-alato. Indusium infundibuliforme, utrinque anguste alato-marginatum, limbo patente vel patentissimo integerrimo vel obsolete repando. Parenchyma indusii e cellulis hexagonoideo-rotundatis constructum. Receptaculum indusio triplo longius, setaceum, rectum aut flexuosum, punctis impressis spiralibus notatum, basi capsuliferum. Capsulæ sessiles, lenticulares."—p. 21.

1. A. Cumingii, *Presl.*

For this beautiful and remarkable fern we are indebted to Mr. Cuming. It was distributed under the numbers 208 and 358. The description of the genus includes that of the species.

Genus, Didymoglossum, *Desvaux.*

This very distinct and beautiful genus was established seventeen years ago by Desvaux, and strange to say, has been neglected by all subsequent filicologists with whose works we are acquainted. It exhibits in an eminent degree the full development of the bifid structure of the limb of the involucre, a character which we believe common to the whole of the Hymenophyllaceæ. We find no trace of this structure in Presl's figure of Cephalomanes (the plant itself we have not examined), but we see no reason for supposing it a departure from a rule that seems little subject to exception.

"Venæ aut flabellatæ pluries dichotomo-furcatæ, aut sæpius pinnatæ simplices ramosæve, steriles apice acuto libero desinentes. Sorus aut exsertus (supramarginalis) subsessilis, aut sæpius immersus (intramarginalis). Indusium infundibuliformi-cylindraceum, limbo bipartito, laciniis ovato-subrotundis obtusis demum patentibus. Receptaculum indusio longius, filiformi-setaceum, plus minus elongatum, basi capsuliferum. Capsulæ sessiles, lenticulares. Rhizoma repens, filiforme, teres, ramosum. Radices alternæ, filiformes, simplices aut ramosæ, radiculis aut paleis piliformibus vestitæ. Frons hygroscopica, tenera, immo tenerrima, transparens, simplex aut varie divisa, nempe lobata, pinnatifida, pinnata usque supradecomposita, paginis conformibus. Stipes in quibusdam brevissimus l. subnullus, in plurimis varie longus, in omnibus teres, in multis fronde decurrente marginatus. Costa media in speciebus venis flabellatis donatis nulla aut non distinguenda, in reliquis utrinque teres, vix prominula. Venæ vix prominulæ, in D. punctato, in D. sphenoide et in D. Hookeri flabellatæ uni-pluries furcatæ, venulis subparallelis angulo acutissimo exorientibus, in reliquis speciebus venæ pinnatim ramosæ distantes multo pauciores, venulis divergentibus. Parenchyma e cellulis rotundato-hexagonoideis constructum. Sorus in plurimis speciebus immersus seu intramarginalis, in quibusdam et quidem præsertim in illis, quæ venis flabellatis donatæ sunt et in illis, quæ ad subgenus Chilodium nuncupatum pertinent, exsertus seu supramarginalis sessilis aut subsessilis aut brevissime pedicellatus. Indusii tubus sæpissime cylindraceus, rarius infundibuliformis, limbus liber bipartitus, laciniis vel partitionibus ovatis aut ovato-subrotundis, obtusis aut acutiusculis, primo adpressis demum patentibus, in quibusdam speciebus purpureo-marginatis, in speciebus ad subgenus Chilodium relatis dentato-laciniatis, in omnibus reliquis speciebus subgenus primum seu Eudidymoglossum constituentibus integerrimis. Receptaculum indusio duplo—triplo—quadruplove longius, rectum aut plus minus flexuosum (verosimiliter exsiccatione), setaceum, basi ima capsuliferum, in parte superiori nuda punctis oblongis impressis spiraliter ambientibus notatum. Capsulæ lenticulares, sessiles."—p. 22.

Presl divides this genus into three sections, as under.

* EUDIDYMOGLOSSUM.

1. D. punctatum. Trichomanes punctatum, *Poir.*
2. D. sphenoides. Tr. sphenoides, *Kunze.* Hymenophyllum guadaloupense, *Spr.*
3. D. Hookeri. Tri. reptans, *Hook. et Grev. Ic. Fil. t.* 32.
4. D. reptans. Tri. reptans, *Sw.*
5. D. muscoides. Tri. muscoides, *Sw.* T. apodum, *Hook. et. Grev. Ic. Fil. t.* 117.
6. D. Kraussii. Tri. Kraussii, *Hook. et Grev. Ic. Fil. t.* 149.
7. D. quercifolium. Tri. quercifolium, *Hook. et Grev.*
8. D. minutulum. Tri. minutulum, *Gaudich.*
9. D. alatum. Hymenophyllum alatum, *Schkuhr, Fil. t.* 1356.
10. D. decipiens. *Desv.*
11. D. Filicula. Tri. bilabiatum, *Nees et Bl.* Hymenoph. Filicula, *Bory.*
12. D. brevipes, *Presl.* "D. fronde breviter stipitata oblongo-lanceolata acuta pinnata, pinnis subsessilibus oblongis obtusis profunde bipinnatifidis glaberrimis, infimis horizontalibus, laciniis oblongo-lanceolatis obtusis, secundariis (lacinulis) linearibus obtusis integerrimis, soris exsertis sessilibus, indusio infundibuliformi alato—

marginato, limbi laciniis subrotundis, rachi superne alata, inferne stipiteque subnuda pubescente.

"Habitat in insulis Philippinis, verosimiliter in insula Luzon, unde retulit clar. Cuming, et aliis plantis immixtum sine numero communicavit."—p. 47.

13. D. undulatum, *Presl.* "D. glaberrimum, fronde lanceolata angustato-acuminata pinnata, pinnis petiolulatis lanceolatis acutis profundissime pinnatifidis, laciniis linearibus obtusis integerrimis undulatis, soris exsertis subpedicellatis, indusio infundibuliformi alato, limbi laciniis ovatis obtusis, receptaculo setaceo, rachibus stipiteque alatis, ala undulata.

"Habitat in insulis Philippinis, verosimiliter in insula Luzon, unde retulit clar. Cuming, et aliis plantis mixtum communicavit."—p. 48.

14. D. serrulatum, *Presl.* "D. fronde ovata acuta aut lanceolata utrinque angustata bipinnata, pinnis petiolulatis oblongo-lanceolatis acutis, pinnulis lanceolatis obtusis profundissime pinnatifidis, laciniis inferioribus bilobis superioribus integris lobisque linearibus sinuato-serrulatis, soris exsertis sessilibus, indusii tubo turbinato-infundibuliformi limbi laciniis ovatis obtusis æquilongo, receptaculo setaceo indusium duplo superante, rachibus superne alatis inferne teretibus costisque venisque paleis piliformibus adspersis glabrisve, stipite filiformi paleaceo-hirsuto. *Cuming, Pl. Exs. Philip. n.* 221.

"Habitat in insulis Philippinis, ubi legit clar. Cuming."—p. 48.

** CHILODIUM.

15. D. Neesii. Tri. Neesii, *Blume.* T. denticulatum, *Blume, excl. syn. Sw. et Willd.* Hym. humile, *Nees et Blume*, et H. dichotomum, *Nees et Blume*, nec Cav.

16. D. longisetum, *Presl.* "D. paleaceo-pubescens glabratumve, fronde oblongo-lanceolata acuta bipinnata, pinnis petiolulatis oblongo-lanceolatis acutis, infimis suboppositis, pinnulis lanceolatis obtusis inciso-acute serratis basi angustatis, incisuris infimis tri- bidentatis, soris exsertis pedicellatis, indusii tubo cylindraceo-infundibuliformi, limbi laciniis rotundatis denticulatis, receptaculo setaceo longissimo, stipite paleaceo-piloso tereti, rhizomate oblique repente. *Cuming, Pl. Exs. Philip. n.* 189, *et n.* 134.

"Habitat in insulis Philippinis, verosimiliter in insula Luzon, ubi legit clar. Cuming."—p. 49.

*** CREPIDIUM.

17. D. humile. Trich. humile, *Forst.*

Genus, MERINGIUM, *Presl.*

The reader's attention is particularly invited to a very remarkable character in this genus: the involucre, as will be seen from the annexed description, is furnished with two linear-lanceolate, acute, serrated bracteas, which are beautifully exhibited in the figure, *t.* viii. *f.* B.

"Venæ alternæ, pinnatim ramosæ venulisque subprominulæ et apice libero desinentes. Sorus lateralis, subpedicellatus, basi bibracteatus. Indusii tubus breviter campanulatus, limbo bipartito, laciniis late ovatis obtusis concavis demum divaricato-patentibus. Capsulæ lenticulares, parti inferiori receptaculi filiformis rigiduli crassiusculi indusio longioris affixæ, sessiles. Rhizoma repens, ramosum, filiforme, ramisque radicibusque paleis piliformibus horizontalibus rufis hirsutum. Stipes duos—semitertium pollicem longus, teres, paleis piliformibus flexuosis patentissimis vel divaricatis hirsutus, demum glabrescens. Frons (limbus) fusco-purpurea, tres—quatuor pollices longa, oblonga, basi nempe angustior quam versus apicem, pinnata, pinnis alternis petiolulatis lanceolatis acutis profundissime pinnatifidis vel si mavis pinnatis, in uno latere frondis majores quam in altero, laciniis vel pinnis secundariis sublanceolatis obtusis quinque—quadri—tri—bilobis, lobis linearibus obtusis angulo acuto interstinctis apicem versus argute serrulatis, infimis superioribus pinnularum superiorum in soros obliteratis et ita angustis ut pedicellum brevissimum mentiantur. Sorus ergo lateralis seu apparenter lateralis, subpedicellatus, multo major quam in Didymoglossi speciebus, basi bracteis duabus oppositis lineari-lanceolatis acutis serratis adpressis tubo indusii æquilongis instructus. Indusii tubus breviter campanulatus, limbus tubo duplo longior, profunde bipartitus, laciniis late ovatis rotundato obtusis concavis patentibus demum divaricato-patentibus. Receptaculum indusio triplo fere longius, filiforme, rigidulum, quemadmodum in Trichomanis paragrapho tertia Pachychætum dicta crassiusculum, cicatriculis spiraliter ambientibus sub lente composita visum instructum, rectum vel curvatum. Capsulæ in inferiori parte receptaculi affixæ, lenticulares sessiles."—p. 24.

1. M. Meyenianum. Hymenophylli species, *Meyen*, *herb*.
2. M. Blumeanum. Hym. pectinatum, *Nees et Blume*. Hym. Blumeanum, *Spr*. Presl places this species doubtfully in Meringium.

Genus, HEMIPHLEBIUM, *Presl*.

"Rachis in costas duas—tres pinnatim ramoso. Vena inframarginalis, interna, tenuissima, continua, latere interiore venulas plurimas tenuissimas simplices (rarissime duabus in unam coalescentibus) et rachim costamque versus directas ac libere desinentes emittens. Sorus aut exsertus (supramarginalis) subsessilis, aut semiimmersus (intramarginalis). Indusium infundibuliforme, limbo bipartito, laciniis ovato-semiorbiculatis marginatis. Receptaculum indusio longius, filiformi-setaceum, elongatum, basi capsuliferum. Capsulæ sessiles, lenticulares. Rhizoma repens, tenuissimum, filiforme, ramosum, paleis piliformibus fuscis vestitum. Radices minutæ, filiformes, piloso-tomentosæ. Herbula semipollicaris, sæpe minor. Frons hygroscopica, tenerrima, transparens, simplex, bi- triloba, margine pilis stellato-pluriradiatis remotiusculis instructa, paginis conformibus. Stipes vix linealis, fronde decurrente marginatus, ima basi nudus teres tenuissimus, fuscus. Rachis fusca, teres, prominula, juxta numerum loborum frondis in tot costas quoque fuscas teretes vix prominulas pinnatim divisa. Vena tenuissima, exoriens ad utrumque latus baseos rachidis, infra marginem frondis circum circa excurrens et continua et cum apice costarum ad dextram et sinistram anastomosans, emittens ex latere interno venulas plurimas rectas tenuissimas versus costam rachimque directas et apice acutissimo libere desinentes ut plurimum simplices rarissime duas in medio latere in unam confluentes. Parenchyma transparens, e cellulis subrotundo-hexagonis subregularibus constructum. Sorus aut exsertus sessilis, vel obsolete pedicellatus aut semiimmersus, in quovis lobo frondis superiori solitarius. Indusium infundibuliforme, convexum, limbo bipartito, laciniis seu partitionibus semiorbicularibus elevato-purpureo-marginatis sinu obtuso interceptis parallelis æquilongis appositis. Receptaculum indusio plus quam duplo longius, setaceum, rectum, punctis spiraliter ambientibus notatum, basi capsuliferum. Capsulæ lenticulares, sessiles, crebræ."—p. 25.

1. H. pusillum. Trichomanes pusillum, *Sw*.

(To be continued).

Art. CCXXXI. — *Varieties.*

501. *Note on Œnanthe pimpinelloides.* Allow me to make a few observations upon the notice of this plant (Phytol. 1020 and 1031), in which my name is brought prominently forward; and first, to state that Mr. Ball's paper, which is there referred to, is contained in the last number of the 'Annals of Natural History,' and that a paper of mine, upon the same subject, is already printed off for the next number of that journal. To these I must refer Mr. Lees for the detailed reasons which have led Mr. Ball and myself now to consider that we possess three Œnanthes in this country, to which the names of Œ. pimpinelloides, Œ. Lachenalii, and possibly Œ. peucedanifolia, may be applied. In common with Mr. Ball, I consider the first to be "very rare," since we only know of its existence in Gloucestershire and Worcestershire, from Mr. Lees' observations, and near Weymouth, from specimens gathered by Mr. Garnons. A "very rare" plant is often abundant in a few places. The observation that this species inhabits dry places is highly interesting, and I believe new, as in all the books to which I have, at this time, the opportunity of turning, the true Œ. pimpinelloides (not that of Smith) is stated to inhabit damp places. Œ. pimpinelloides (*Linn.*) was quite unknown to me as a British native, until I received information concerning it from my friend Ball, and specimens from Mr. Garnons; and as I had indisputable proof that the plant so called by Smith, is the Œ. Lachenalii, I had no other course to pursue in the Manual, than that of omitting the former and introducing the latter name. Œ. Lachenalii always, as I believe, inhabits salt marshes, or at least, marshes near the sea, a situation in which the plant called Œ. peucedanifolia by English botanists has not, to my knowledge, ever been found. I have so often seen Œ. Lachenalii misnamed as Œ. peucedanifolia, that I am led to suspect that even Mr. Lees may have fallen into this error, especially as he speaks of the "elliptical sessile knobs" of Œ. peucedanifolia, in which the knobs are really of an oblong-clavate form, whilst in Œ. Lachenalii, they scarcely deserve the name of knobs, but are rather to be described as long, fleshy, knotted fibres. On this subject however I must refer to the papers already mentioned. It is not necessary to occupy space here with an attempt to determine the plant to which the name of Œ. peucedanifolia really belongs, as I have entered fully into the discussion of that very difficult question in the same paper. From the above it will be seen that I venture to differ from one of the conclusions arrived at by Mr. Lees, and put into the form of an abstract by the reporter of the London Botanical Society's meeting, viz.,

doubting if the Œ. peucedanifolia of British authors is found in salt marshes, and believing that it is Œ. Lachenalii that inhabits them. It is also not a little singular that so acute an observer and excellent a botanist as the compiler of the London Catalogue, having, as we now learn, specimens of both Œ. pimpinelloides and Œ. Lachenalii before him, should have excluded from his list that which he will probably now allow to be the more common plant, and inserted one which is very local in its distribution.—*Charles C. Babington ; Ross, Herefordshire, July* 14, 1844.

ART. CCXXXII.—*Proceedings of Societies.*

BOTANICAL SOCIETY OF EDINBURGH.

Thursday, June 13, 1844. Professor Graham, President, in the chair.

After a delightful walk through the garden and plant houses, accompanied by the learned President, who pointed out many of the beautiful specimens which they contain, the meeting re-assembled in the class-room, when the following papers were read.

I. On four genera of Desmidieæ ; by Mr. John Ralfs, Penzance. The genera are Cosmarium, Pediastrum, Xanthidium and Scenedesmus, and the descriptions of them, which were accompanied by illustrative drawings, will shortly appear in the 'Annals and Magazine of Natural History.'

II. Continuation of Mr. James M'Nab's Journal of a Tour through part of the United States and the Canadas. In the previous part of this journal, Mr. M'Nab gave a brief outline of the principal botanical and horticultural features observed in the neighbourhood of New York. The part now read, embraced chiefly the appearance of the country around Albany, with an account of the most interesting plants seen during the journey thither. Among these the most remarkable were several species of Lycopodium, with which the peaty soils on the road sides around Albany were covered, consisting of L. complanatum, clavatum and dendroides, the latter resembling at a distance young spruce fir-trees — being similarly shaped and of a lively green colour. In damp situations in the close forests, Adiantum pedatum and other ferns covered large tracts, while Pyrola elliptica and rotundifolia, with Chemophylla maculata and umbellata were in full flower along the drier parts. Satyrium herbiola and Neottia tortilis were also observed—the latter growing chiefly in pairs. The principal plants noticed in the meadows or open grounds were Lilium Philadelphicum and Canadense, Mimulus ringens, Verbena hastata and Urticæfolia, and

Asclepias obtusifolia and variegata. Proceeding towards Troy, on the banks of the Hudson, great quantities of Kalmia angustifolia, Cornus florida, Lupinus perennis, Andromedas, Vacciniums &c., occurred. In an extensive forest, chiefly composed of small trees, and much entangled with Smilax, or green brier, through which the party proceeded with great difficulty, Cypripedium spectabile covered large patches, with Arum triphyllum, the latter in full flower. Mr. M'Nab concluded the present part of his journal with an account of some large trees of the hemlock spruce, Abies canadensis, being the first of this tree which the party had observed in natural situations: — the largest specimens were about 10 feet in circumference, and 80 feet in height.

The Honorable G. C. Cunningham, Mauritius, and F. S. Cordier, M.D., Paris, were elected foreign members; and Alfred Greenwood, Esq., Chelmsford, Essex, a non-resident Fellow of the Society.

BOTANICAL SOCIETY OF LONDON.

July 5, 1844.—Dr. Francis Bossy in the chair.

Specimens of the following plants were exhibited, sent to the Society by Mr. Hewett Watson.

Carex elongata (*Linn.*), found abundantly in Weybridge marshes. This locality is interesting to the metropolitan botanist; the nearest habitat previously on record being in the county of Salop.

A pubescent-flowered variety of Bromus commutatus (*Schrad.*), found plentifully, along with the more abundant glabrous form, in a meadow by the river Mole, between Esher and West Moulsey, Surrey. This variety affords another instance to prove the little importance which can be given to the character of smooth or downy flowers, as a specific distinction in this genus. It will form an addition to the 'London Catalogue of British Plants' (b. *pubens*), to be entered under "Bromus (1355) commutatus."

A specimen of Lolium multiflorum, the root of which was dug up, when in flower, in a sown field last year, and the plant is now copiously flowering in Mr. Watson's garden; thus proving its perennial existence, although the alleged annual root of L. multiflorum has been considered the best distinction between this supposed species and L. perenne. The other alleged differences are equally invalid.

Garden specimens of Festuca pratensis (*Huds.*) and F. arundinacea (*Schreb.*), to show the strongly marked differences between them; the latter being three times the size, extremely harsh to the touch, and very dissimilar in its flowers and mode of inflorescence. In F. pratensis the branches of the panicle are erect after flowering, the paleæ or glumes obtuse and awnless, and the sheaths of the leaves nearly smooth : in F. arundinacea, the branches of the panicle are horizontal or reflexed, the glumes acute and awned, and the sheaths and leaves very rough.

Mr. W. admitted Festuca loliacea and pratensis to be forms of one species; indeed he had shown this to the Edinburgh botanists, just after they had printed their Catalogue, in which F. loliacea is kept as a distinct species, while F. pratensis is united with F. elatior (*Linn.*) But he was not yet prepared to combine all three, and F. arundinacea likewise, under the one name of F. elatior, as is done by Mr. Babington. Mr. W.'s plant of F. arundinacea was originally brought to his garden from the Isle of Wight, and is now a large sheaf, with hundreds of flowering stems, five to seven feet high, and the root-leaves half a yard long.

A specimen of Œnanthe pimpinelloides (*Linn.*), to show the cylindrical form of the fruit, which exactly corresponds with that of the Sardinian plant (admitted to be the true species), except in having two callosities at the base. This was taken from a plant in Mr. W.'s garden, the parent of which had been brought thither from a hedge bank in the Isle of Wight. Mr. W. recognized a second species in Britain, often sent to him under the name of Œ. peucedanifolia, and readily distinguished by its turbinate or elliptic fruit, upon extremely short pedicels, and more resembling Œ. globulosa than Œ. pimpinelloides. The peculiar form of the root to some other specimens, resembling that of a Dahlia in miniature, induces a supposition that there may be a third species, although Mr. Watson has satisfied himself that the roots vary greatly with age and situation, and do not afford such certain characters for distinction as may be found in the fruit. The Œ. Lachenalii (of Babington's Manual) is apparently the species frequently sent under the name of Œ. peucedanifolia, though occasionally named Œ. pimpinelloides by English botanists. Mr. W. would illustrate this subject more fully on another occasion.

Specimens of the garden fennel, to show the little importance to be attached to the difference of the stems being fistulose or filled with pith. These specimens were sections of stems arising from a single root, of different dimensions, but of nearly equal age and stage of development. Some of them (the thicker) were hollow, others filled with pith. A question respecting a distinction of species, between the wild and garden fennels, has been raised in consequence of one author describing the stems as fistulose, while another finds them solid ; but since both conditions can exist on one root, at the same time, such a distinction would be quite inadmissible for a specific character.

A stem of Hieracium Lawsoni, which had borne twenty flowers in Mr. W.'s garden, this spring; and others had flowered more numerously than this one. In the wild state, on the Grampians (the locality from which the plants were brought three years ago), this species has usually two, three, or four flowers only. He had seen a wild Irish specimen with six or eight flowers. No care had been bestowed upon the plants in his garden, except occasional watering in dry weather, and removal of weeds from about them. Mr. W. sent the specimen merely as an example of the little dependence to be placed upon the number of flowers on the Hieracia; indeed among the Compositæ generally. A wild plant, growing free from the interference of other plants about it, might also increase its flowers five or ten fold, as practical botanists must be well aware, from observation.

Read, "A Synoptical View of the British Fruticose Rubi, arranged in Groups, with explanatory remarks," (part 4); by Edwin Lees, Esq. F.L.S. The paper was accompanied by drawings and specimens. — *G. E. D.*

MICROSCOPICAL SOCIETY OF LONDON.

June 19, 1844. Dr. J. S. Goodfellow in the chair.

A paper was read by Edwin J. Quekett, Esq., On an apparently new form of vegetable discharged from the human stomach, belonging to the class Algæ. Mr. Quekett, after noticing numerous instances where parasitical plants have been found on the exterior of man, as well as of the lower animals, where they constitute diseases which often cause the death of the creature so affected, proceeded to describe several instances where vegetation evidently existed in the interior of the body, and in the stomach especially. In the case alluded to, continued sickness prevailed in a constitution much debilitated by disease of the liver, the matter ejected putting on the appearance of coffee-coloured flakes in a transparent gelatinous fluid. On submitting the flakes to the microscope, they appeared to consist solely of vesicles of about the $\frac{1}{3000}$ part of an inch in diameter, adhering to each other in a beaded manner, seldom however extending beyond three or four, or otherwise in a tetrahedral form. The vesicles appear to contain granular matter, much resemblance existing between them and the yeast-plant, Torula Cerevisiæ, but not identical with each other.

After some discussion as to the real nature of these bodies, the Society adjourned until October next.—*J. W.*